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10/586,199	07/14/2006	Ralf Backer	04-H01US	2780

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EXAMINER	
SUGLO, JANET L	

ART UNIT	PAPER NUMBER
2857	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/586,199	BACKER ET AL.	
	Examiner	Art Unit	
	JANET L. SUGLO	2857	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 March 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 July 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The action is responsive to the Amendment filed on March 6, 2009. Claims 7-25 are pending. Claims 7, 13 and 19 have been amended. Claims 1-6 have been cancelled.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. **Claims 7-25** are rejected under 35 U.S.C. 103(a) as being unpatentable over Mochizuki (US Patent 4,969,363) in view of O'Donnell et al. (US Patent 6,611,770) (hereinafter "O'Donnell").

With respect to **claim 7**, Mochizuki teaches a method for operation of a flowmeter that uses magnetic induction to measure only the flow rate of an electrically conductive fluid flowing through said flowmeter and provide a signal representative of said flow rate (Mochizuki: Abstract, col 1, ln 8-10; col 4, ln 25-31), said flowmeter having a supply for providing power to produce a magnetic field used in said flow measurement (Mochizuki: col 3, ln 11-26; col 5, ln 46-50), said method comprising:

determining at a particular instance of time (e.g., the time that the signal-to-noise ratio is determined) from said signal representative of said flow rate an instantaneous signal-to-noise ratio (Mochizuki: col 5, ln 57-68); and

adjusting in response to a conductivity signal said power provided by said supply so that said power is supplied inverse to said determined instantaneous signal-to-noise ratio (Mochizuki: col 5, ln 57-68). Mochizuki does not explicitly state that the power is inversely supplied in response to the signal to noise ratio. Mochizuki does state that the power is inversely supplied in response to the conductivity signal. O'Donnell states that the conductivity signal corresponds to the signal to noise ratio so that a higher conductivity means a good signal to noise ratio and a lower conductivity means high noise (O'Donnell: col 2, ln 32-39; col 6, ln 52-61). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mochizuki to include the signal to noise ratio of O'Donnell because it avoids leakage problems (O'Donnell: col 1, ln 12-30).

With respect to **claim 8**, Mochizuki further teaches indicating (i.e., pointing out) a value that represents said determined instantaneous signal-to-noise ratio (Mochizuki: col 5, ln 64-68).

With respect to **claim 9**, Mochizuki further teaches indicating a value that represents said provided power (Mochizuki: The power signal is indicated to the circuit to which the signal is provided. col 3, ln 11-26; col 5, ln 46-50).

With respect to **claim 10**, Mochizuki further teaches indicating a value that represents said provided power (Mochizuki: The power signal is indicated to the circuit to which the signal is provided. col 3, ln 11-26; col 5, ln 46-50).

With respect to **claim 11**, Mochizuki teaches generating a warning when said determined conductivity indicates that the voltage has exceeded a predetermined value

(Mochizuki: col 4, ln 41- col 5, ln 21). Mochizuki explains that alarm is issued when the resistance of the fluid (inversely related to the conductivity) exceeds a predetermined value which in turn increases the voltage drop. This situation also indicates that there is not enough water in the pipe to measure the flow rate. Mochizuki does not state that the signal to noise ratio indicates the noise voltage has exceeded a predetermined value. O'Donnell states that the conductivity signal corresponds to the signal to noise ratio so that a higher conductivity means a good signal to noise ratio and a lower conductivity means high noise (O'Donnell: col 2, ln 32-39; col 6, ln 52-61). O'Donnell further teaches that an empty pipe condition produces high levels of noise and an alarm level is produced when the conduction is inadequate for accurate flow measurement (O'Donnell: col 4, ln 66 – col 5, ln 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mochizuki to include the signal to noise ratio of O'Donnell because it avoids leakage problems (O'Donnell: col 1, ln 12-30).

With respect to **claim 12**, Mochizuki further teaches switching off said power supply when said flow rate is zero or virtually zero (Mochizuki: col 7, ln 51-66).

With respect to **claim 13**, Mochizuki teaches a method for operation of a flowmeter that uses magnetic induction to measure only the flow rate of an electrically conductive fluid flowing through said flowmeter and provide a signal representative of said flow rate (Mochizuki: Abstract, col 1, ln 8-10; col 4, ln 25-31), said flowmeter having a supply for providing power to produce a magnetic field used in said flow measurement (Mochizuki: col 3, ln 11-26; col 5, ln 46-50), said method comprising:

determining at a particular instance of time (e.g., the time that the signal-to-noise

ratio is determined) from said signal representative of said flow rate an instantaneous signal-to-noise ratio (Mochizuki: col 5, ln 57-68); and

adjusting in response to a conductivity signal said power provided by said supply so that said supply supplies less power when said conductivity signal is higher and more power is supplied when said conductivity signal is lower (Mochizuki: col 5, ln 57-68). Mochizuki does not explicitly state that less power is supplied when said instantaneous signal-to-noise ratio is higher and more power is supplied when said instantaneous signal-to-noise ratio is lower. Mochizuki does state that the power is inversely supplied in response to the conductivity signal. O'Donnell states that the conductivity signal corresponds to the signal to noise ratio so that a higher conductivity means a good signal to noise ratio and a lower conductivity means high noise (O'Donnell: col 2, ln 32-39; col 6, ln 52-61). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mochizuki to include the signal to noise ratio of O'Donnell because it avoids leakage problems (O'Donnell: col 1, ln 12-30).

With respect to **claim 14**, Mochizuki further teaches indicating (i.e., pointing out) a value that represents said determined instantaneous signal-to-noise ratio (Mochizuki: col 5, ln 64-68).

With respect to **claim 15**, Mochizuki further teaches indicating a value that represents said provided power (Mochizuki: The power signal is indicated to the circuit to which the signal is provided. col 3, ln 11-26; col 5, ln 46-50).

With respect to **claim 16**, Mochizuki further teaches indicating a value that

represents said provided power (Mochizuki: The power signal is indicated to the circuit to which the signal is provided. col 3, ln 11-26; col 5, ln 46-50).

With respect to **claim 17**, Mochizuki teaches generating a warning when said determined conductivity indicates that the voltage has exceeded a predetermined value (Mochizuki: col 4, ln 41- col 5, ln 21). Mochizuki explains that an alarm is issued when the resistance of the fluid (inversely related to the conductivity) exceeds a predetermined value which in turn increases the voltage drop. This situation also indicates that there is not enough water in the pipe to measure the flow rate. Mochizuki does not state that the signal to noise ratio indicates the noise voltage has exceeded a predetermined value. O'Donnell states that the conductivity signal corresponds to the signal to noise ratio so that a higher conductivity means a good signal to noise ratio and a lower conductivity means high noise (O'Donnell: col 2, ln 32-39; col 6, ln 52-61). O'Donnell further teaches that an empty pipe condition produces high levels of noise and an alarm level is produced when the conduction is inadequate for accurate flow measurement (O'Donnell: col 4, ln 66 – col 5, ln 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mochizuki to include the signal to noise ratio of O'Donnell because it avoids leakage problems (O'Donnell: col 1, ln 12-30).

With respect to **claim 18**, Mochizuki further teaches switching off said power supply when said flow rate is zero or virtually zero (Mochizuki: col 7, ln 51-66).

With respect to **claim 19**, Mochizuki teaches a method for operation of a flowmeter that uses magnetic induction to measure only the flow rate of an electrically

conductive fluid flowing through said flowmeter and provide a signal representative of said flow rate (Mochizuki: Abstract, col 1, ln 8-10; col 4, ln 25-31), said flowmeter having a supply for providing power to produce a magnetic field used in said flow measurement (Mochizuki: col 3, ln 11-26; col 5, ln 46-50), said method comprising:

determining at a particular instance of time (e.g., the time that the signal-to-noise ratio is determined) from said signal representative of said flow rate an instantaneous signal-to-noise ratio (Mochizuki: col 5, ln 57-68); and

adjusting in response to a conductivity signal said power provided by said supply so that more power is supplied by said supply when said conductivity signal is low than is supplied by said supply when said conductivity signal is high (Mochizuki: col 5, ln 57-68). Mochizuki does not explicitly state that more power is supplied by said supply when said signal-to-noise ratio is low than is supplied by said supply when said signal-to-noise ratio is high. Mochizuki does state that the power is inversely supplied in response to the conductivity signal. O'Donnell states that the conductivity signal corresponds to the signal to noise ratio so that a higher conductivity means a good signal to noise ratio and a lower conductivity means high noise (O'Donnell: col 2, ln 32-39; col 6, ln 52-61). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mochizuki to include the signal to noise ratio of O'Donnell because it avoids leakage problems (O'Donnell: col 1, ln 12-30).

With respect to **claim 20**, Mochizuki further teaches indicating (i.e., pointing out) a value that represents said determined instantaneous signal-to-noise ratio (Mochizuki: col 5, ln 64-68).

With respect to **claim 21**, Mochizuki further teaches indicating a value that represents said provided power (Mochizuki: The power signal is indicated to the circuit to which the signal is provided. col 3, ln 11-26; col 5, ln 46-50).

With respect to **claim 22**, Mochizuki further teaches indicating a value that represents said provided power (Mochizuki: The power signal is indicated to the circuit to which the signal is provided. col 3, ln 11-26; col 5, ln 46-50).

With respect to **claim 23**, Mochizuki teaches generating a warning when said determined conductivity indicates that the voltage has exceeded a predetermined value (Mochizuki: col 4, ln 41- col 5, ln 21). Mochizuki explains that an alarm is issued when the resistance of the fluid (inversely related to the conductivity) exceeds a predetermined value which in turn increases the voltage drop. This situation also indicates that there is not enough water in the pipe to measure the flow rate. Mochizuki does not state that the signal to noise ratio indicates the noise voltage has exceeded a predetermined value. O'Donnell states that the conductivity signal corresponds to the signal to noise ratio so that a higher conductivity means a good signal to noise ratio and a lower conductivity means high noise (O'Donnell: col 2, ln 32-39; col 6, ln 52-61). O'Donnell further teaches that an empty pipe condition produces high levels of noise and an alarm level is produced when the conduction is inadequate for accurate flow measurement (O'Donnell: col 4, ln 66 – col 5, ln 4). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mochizuki to include the signal to noise ratio of O'Donnell because it avoids leakage problems (O'Donnell: col 1, ln 12-30).

With respect to **claim 24**, Mochizuki further teaches switching off said power supply when said flow rate is zero or virtually zero (Mochizuki: col 7, ln 51-66).

With respect to **claim 25**, Mochizuki further teaches adjusting in response to said conductivity signal said power provided by said supply so that less power is supplied by said supply when said conductivity signal is high than is supplied by said supply when said conductivity signal is low (Mochizuki: col 5, ln 57-68). Mochizuki does not explicitly state that less power is supplied by said supply when said signal-to-noise ratio is high than is supplied by said supply when said signal-to-noise ratio is low. Mochizuki does state that the power is inversely supplied in response to the conductivity signal. O'Donnell states that the conductivity signal corresponds to the signal to noise ratio so that a higher conductivity means a good signal to noise ratio and a lower conductivity means high noise (O'Donnell: col 2, ln 32-39; col 6, ln 52-61). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mochizuki to include the signal to noise ratio of O'Donnell because it avoids leakage problems (O'Donnell: col 1, ln 12-30).

Response to Arguments

4. Applicant's arguments filed March 6, 2009 have been fully considered but they are not persuasive.

Applicant argues that Mochizuki does not teach *instantaneous* signal-to-noise ratio; however, Applicant's arguments are not well taken. Mochizuki teaches signal to noise ratio at, for example, column 2, ln 22-36 and column 5, lines 64-68. O'Donnell teaches signal to noise ratio at, for example, column 6, lines 52-61. Instantaneous

signal to noise ratio is the signal to noise ratio at an instant. Even if the signal to noise ratio in both Mochizuki and O'Donnell is meant to be an average signal to noise ratio or an aggregate signal to noise ratio, if you have a signal to noise ratio value that includes a compilation of multiple signal to noise ratios taken at multiple instants, there is inherently a signal to noise ratio taken at a single instant included.

Applicant argues that Mochizuki does not teach "determining *at a particular instance of time* from said signal representative of said flow rate an instantaneous signal-to-noise ratio'" however, Applicant's arguments are not well taken. The amended phrase "at a particular instance of time" merely clarifies that the determination happens at a time. That time could be any time, so the fact that Mochizuki determines the same value means that the determination happened at a particular instance in time. That particular instance in time is the time that the determination happened. Mochizuki further teaches adjusting in response to a conductivity signal said power provided by said supply so that more power is supplied by said supply when said conductivity signal is low than is supplied by said supply when said conductivity signal is high (Mochizuki: col 5, ln 57-68). Mochizuki does not explicitly state that more power is supplied by said supply when said signal-to-noise ratio is low than is supplied by said supply when said signal-to-noise ratio is high. Mochizuki does state that the power is inversely supplied in response to the conductivity signal. O'Donnell states that the *conductivity signal corresponds to the signal to noise ratio* so that a higher conductivity means a good signal to noise ratio and a lower conductivity means high noise (O'Donnell: col 2, ln 32-39; col 6, ln 52-61) which would mean that the conductivity signal of Mochizuki

corresponds to the signal to noise ratio, and thus the signal to noise ratio is used to adjust the power provided. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mochizuki to include the signal to noise ratio of O'Donnell because it avoids leakage problems (O'Donnell: col 1, ln 12-30).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Droppo et al. (US Patent 7,363,221) teaches a method of noise reduction using instantaneous signal-to-noise ratio as the principal quantity for optimal estimation.

Fleming-Dahl (US Patent 6,442,495) teaches an average signal to noise ratio estimator made up of instantaneous signal to noise ratios.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JANET L. SUGLO whose telephone number is (571)272-8584. The examiner can normally be reached on M-F from 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eliseo Ramos-Feliciano can be reached on 571-272-7925. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JANET L SUGLO/
Examiner, Art Unit 2857

/Eliseo Ramos-Feliciano/
Supervisory Patent Examiner, Art Unit 2857